Q1. What do you understand by Agronomy? Discuss its scope .
Ans.
The term “Agronomy” is derived from Greek words “Agros” meaning field and “nomos” meaning to manage. It is a branch of agricultural science that deals with principles and practices of soil, water and crop management with the objective of increasing production and productivity.
It involves Planning, programming, and executing measures for maximum utilization of land, labour, capital, and other factors of production
Scope of Agronomy
Agronomy is a dynamic discipline that keeps updating with the advancement of knowledge and research. It becomes imperative in Agriculture in the following areas.
✓ Identification of proper season for cultivation of wide range of crops is needed which could be made possible only by Agronomy science.
✓ Proper methods of cultivation are needed to reduce the cost of cultivation and maximize
✓ the yield and economic returns.
✓ Application of chemical fertilizers : to reduce the ill-effects due to excess application and yield losses due to the unscientific manner of application.
✓ Weed control : knowledge about selectivity, time & method of herbicides application.
✓ Water management practices : Agronomy science answer to the questions ‘how much to apply?’ and ‘when to apply?’.
✓ Intensive cropping is the need of the day and proper time and space intensification not only
✓ increase the production but also reduces the environmental hazards.
✓ Dry land agriculture: New technology to overcome the effect of moisture stress under dry land condition is explored by Agronomy and future agriculture is depends on dry land agriculture.
✓ Packages of practices to explore full potential of new varieties of crops are the most important aspects in crop production which could be made possible only by Agronomy science.
Maintaining the ecological balance through efficient management of crops, livestock and their feedings in a rational manner is possible only by knowing agronomic principles.
Agronomy is a science and a practice that looks at agriculture from an integrated, holistic perspective. It also considers how to grow crops effectively and profitably while conserving natural resources and protecting the environment. When we understand the significance of agronomy as well as the agricultural resources that surrounds us, we can enable soil and plants to reach their maximum potential and reap the advantages out of it.

Q2. Briefly discuss the role of Agronomist ?
Ans.
Agronomist is a scientist who deals with the study of problems of crop production and adopts/recommends practices of better field crop production and soil management to get high yield and income.

His role is wide in scope such as
✓ High Yield : Agronomist aims at obtaining maximum production at minimum cost by exploiting the knowledge of the basic and applied sciences for higher crop production.
✓ Food security : concerned with production of food and fibre to meet the needs of growing population.
✓ Management of available resources : He develops efficient and economic field preparation method for sowing crops in different season. (Flat bed, Ridges and furrows)
o Also evolves efficient method of cultivation (whether broadcasting, nursery and transplantation or dibbling, etc.), provides better crop establishment and maintain required population
✓ Selection of suitable crops : He is also involved in selection of suitable crop and varieties to suit or to match varied seasons and soils.
o Eg. Red soil - groundnut,

o Black soil - cotton,
o Sandy soil – tuberous crops,
o Saline soil – Finger millet (Ragi).
o In Kharif if water is sufficient go for rice and water is not sufficient go for maize, sorghum.
✓ Nutrient management : He has to identify various types of nutrients required by crops including time and method of application
o e.g. for long duration rice (150-60-60 kg NPK), short duration: 120:50:50 kg NPK/ha Application
✓ Weed management : Agronomist must select a better weed management practice. Either through mechanical or physical (by human work) or chemical (herbicides or weedicides, or cultural.
o Weeds are controlled by integrated weed management method also
✓ Irrigation management : Selection of proper irrigation method, irrigation scheduling i.e. irrigation timing and quantity based on the crops to be irrigated, whether to irrigate continuously or stop in between and how much water to be supplied are computed by agronomy science so as to achieve maximum water use efficiency.
✓ Agronomists also develops the method of harvesting, time for harvesting, etc. (Appropriate time of harvest essential to prevent yield loss)
Agronomist is responsible for every decision made in the farm management, right from the type of crop to be produced or area to be allotted for each crop to marketing of produce. Purpose is to take appropriate decision at appropriate time to efficiently use available resources .

Q3. What are the challenges of Agriculture in 21st Century ?
Ans

Agriculture of the twentieth century will be remembered for its scientific foundations and for high crop yields leading to Green revolution.
Agriculture in the twenty-first century will have to respond to challenges of a different kind such as
✓ Sustainability of Production Systems : there is a need for a much greater focus on the sustainability of intensive production systems. The present agricultural technology associated with the green revolution is based on a simple paradigm of favourable genotype-environment interactions.
o The semi-dwarf varieties of crop plants with a high harvest index thrive in a highly manipulated agronomic environment dominated by the use of chemicals of various kinds. There are serious concerns about the long-term viability of some of these technologies.
o with the development of irrigation, vast tracts of agricultural lands have been lost to crop production because of increasing salinity associated with poor drainage.
o large-scale mining of soils, leading to deficiencies of plant nutrients like zinc and boron ✓ Environmental and Efficiency Concerns
o The intensive use of chemicals in modern agriculture is responsible for major environmental problems. There has been a build-up of nitrates in the rivers and lakes, contaminating water.
o There is also the contamination of foodstuffs with residues of pesticides and toxic chemicals.
✓ Production, Equity, and Management of Natural Resources
o The scientific challenge is the generation of a new kind of production technology for the vast dry and marginal lands, which so far have received relatively little attention. It is known that the key to improving the productivity of these lands lies in the rehabilitation and restoration of their

soil fertility and in the conservation and management of rain water so that enough moisture is available to provide the equivalent of one or two protective irrigations.
o Once enough of this water is conserved to sustain some of the critical stages of crop growth, the high-yielding varieties already developed could be introduced in these lands with the application of moderate doses of inorganic fertilisers.
More than ever before, the need now is to increase productivity per unit of land owing to increasing population of the world. So all possible resources of modern science must be harnessed to achieve this objective. Use of organic manures along with inorganic fertilisers is highly recommended. Major emphasis should be on recycling of organic wastes and residues for meeting the nutrient needs of crop plants.
Scientific advances in molecular biology, biotechnology, information technology, nano-technology and space science should offer altogether new opportunities for making agriculture not only highly productive but also more efficient and sustainable in relation to the use of natural resources and modern farm inputs.